CALIFORNIA DEPARTMENT OF HEALTH SERVICES
850 Marina Bay Parkway, Richmond, CA 94804

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

May 2006

Technical Report No. 06-16

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of May, 2006. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed along the entire Southern California coast during May (Figure 1). The relative abundance of this

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during May, 2006.

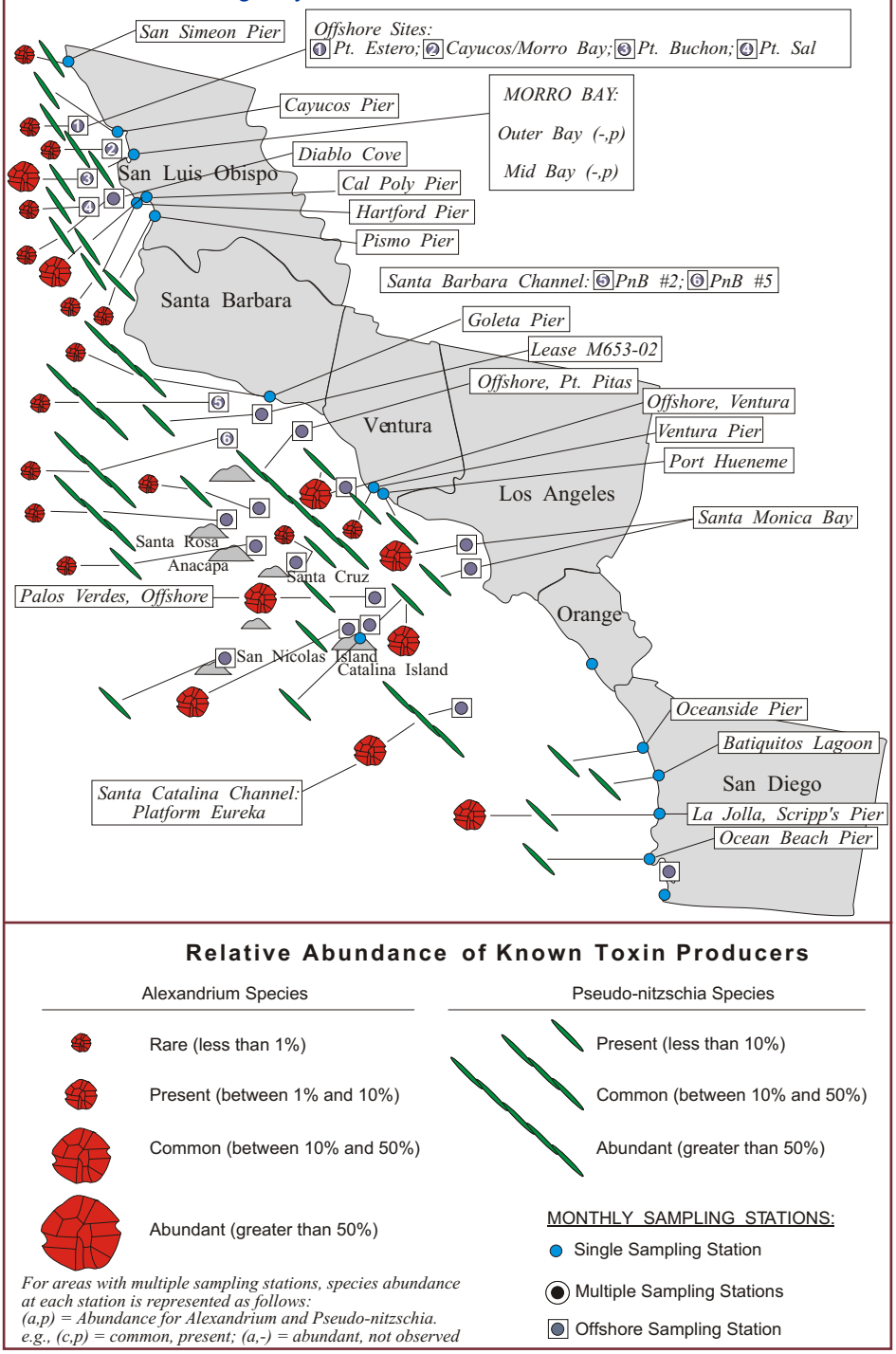
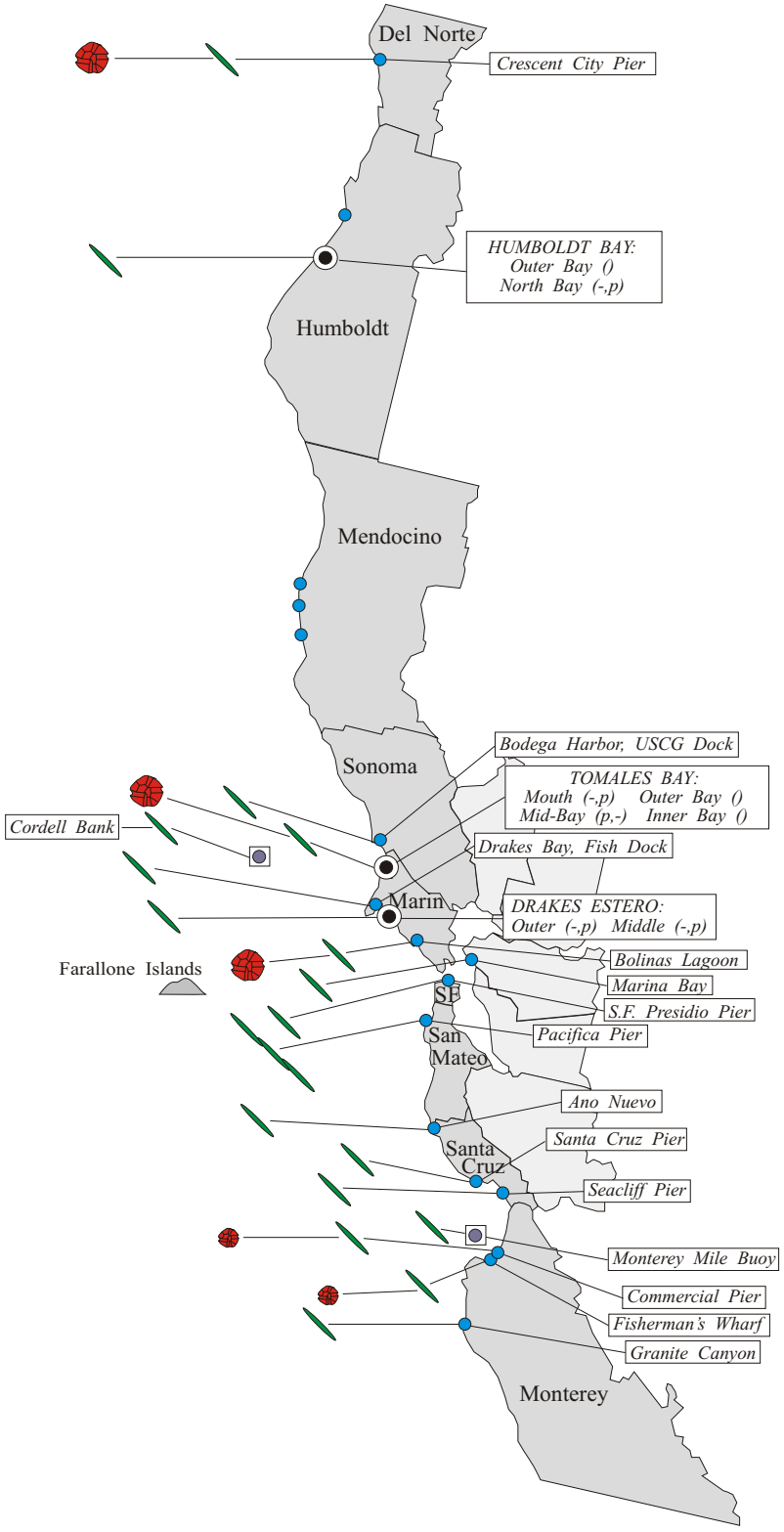


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during May, 2006.



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dinoflagellate decreased at a number of offshore and onshore sampling stations. The highest cell numbers were observed at offshore locations along the San Luis Obispo and Los Angeles coast. This marks the third consecutive month that *Alexandrium* has been observed along the Southern California coast, a rare if not unprecedented event.

Low levels of PSP toxins persisted at sites in Santa Barbara through the first half of May. A sample of rock scallop viscera, collected near Anacapa Island on May 26, contained a high concentration of these toxins (456 ug/100g tissue). The scallop adductor was found to contain a low concentration of toxins (46 ug).

Domoic Acid

Pseudo-nitzschia continued to be observed along the entire Southern California coast in May (Figure 1). The relative abundance decreased compared to observations in April. The highest relative abundance was observed in a sample collected offshore of Pt. Pitas (northern Ventura County) in mid-May.

Domoic acid was not detected in shellfish samples collected in May (Figure 3). In addition, samples of bait fish (sardines, anchovy) provided by the live bait dealers in Morro Bay and Port San Luis did not contain

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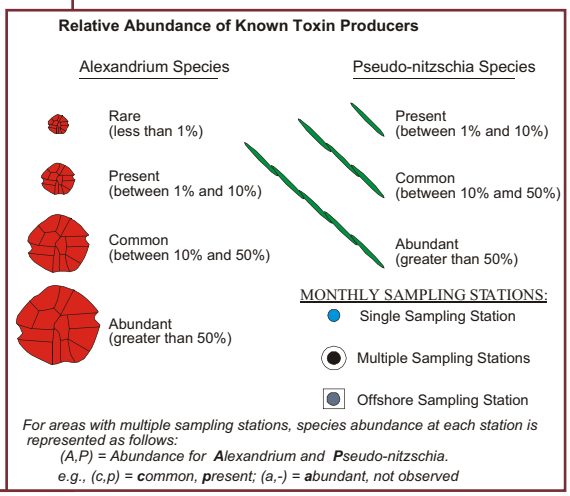
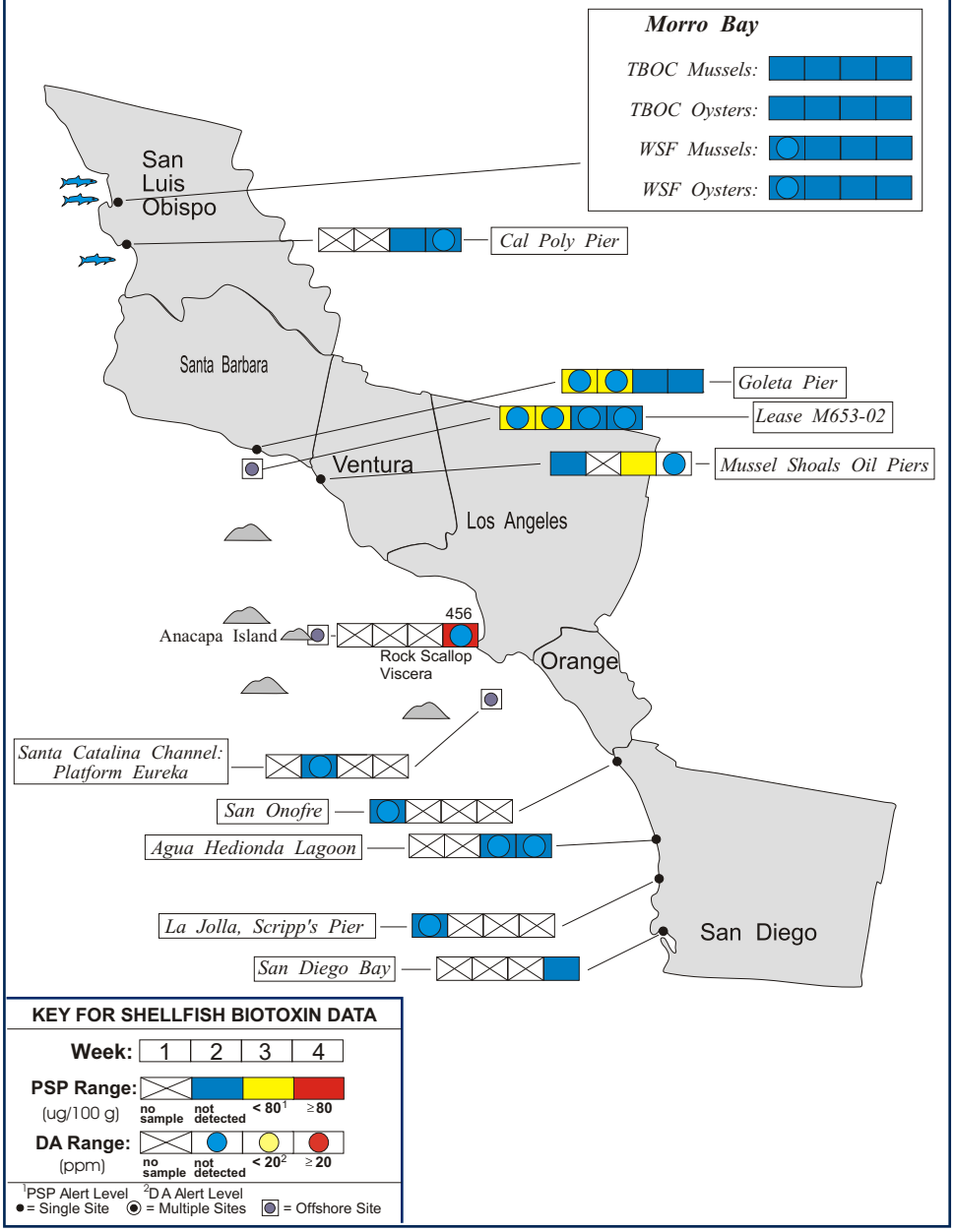


Figure 3. Distribution of shellfish biotoxins in Southern California during May, 2006.



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detectable levels of this toxin.

Non-toxic Species

Diatoms (*Chaetoceros*, *Thalassiosira*) were dominant offshore of the San Luis Obispo coast, while the nearshore sites contained a mix of diatoms and dinoflagellates (*Prorocentrum*). A mix of these two groups occurred at other offshore sites from the Channel Islands to Catalina. The dinoflagellates *Prorocentrum* and *Ceratium* were the most common dinoflagellates at nearshore sites from Santa Barbara through San Diego. *Cochlodinium* was common offshore near Anacapa Island.

Northern California Summary:

Paralytic Shellfish Poisoning

The distribution and relative abundance of *Alexandrium* increased in May compared to observations in April (Figure 2). This dinoflagellate was observed at sites between Marin and Monterey counties, as well as in Crescent City (Del Norte County). The relative abundance of *Alexandrium* decreased compared to observations in April.

PSP toxins were not detected in any shellfish samples from Northern California sites during May.

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553 - 4133

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Domoic Acid

The distribution and relative abundance of *Pseudo-nitzschia* was similar to observations in April, except for the additional observations of very low numbers in Humboldt Bay and Crescent City. This diatom was observed at sampling stations between Sonoma and Monterey counties (Figure 2).

A low concentration of domoic acid (4 ppm) was detected in razor clams from Crescent City during the last week of May. This toxin was not detected in any other shellfish samples.

Non-toxic Species

Diatoms dominated the phytoplankton assemblage along the Northern California coast during May. *Chaetoceros, Skeletonema*, and *Thalassiosira* were the most common genera, however there were a variety of other species present in lower numbers. *Biddulphia* was common at some locations, as was *Leptocylindrus*. The dinoflagellate *Gymnodinium* was common inside Tomales Bay.

QUARANTINES:

On March 24 a health advisory was issued warning consumers not to eat sport-harvested species of bivalve shellfish, sardines and anchovies, or the viscera of sport-harvested or commercially sold lobster or crab taken

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Figure 4. Distribution of shellfish biotoxins in Northern California during May, 2006.

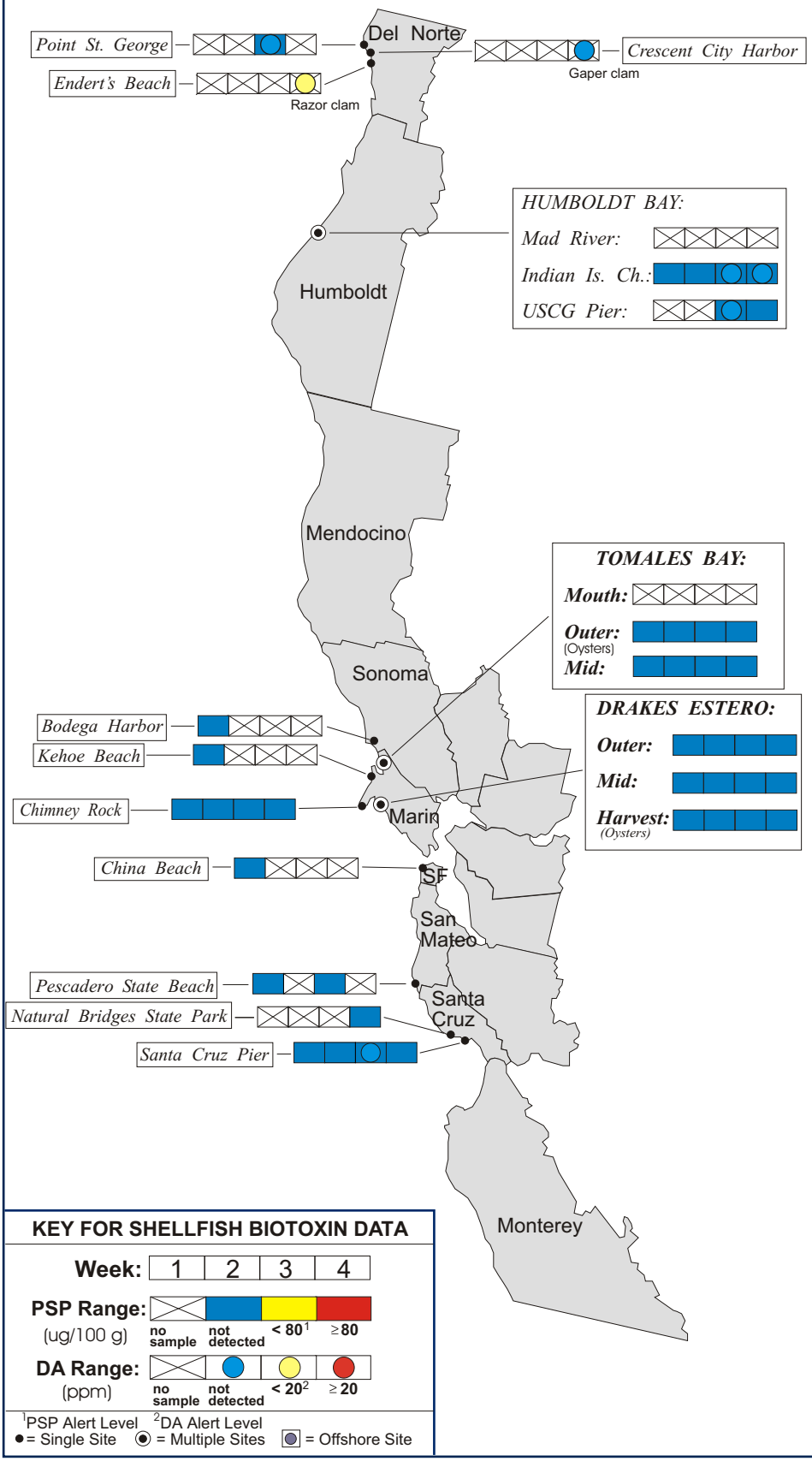

Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during May, 2006.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
	University of California Sea Grant Extension	2
Humboldt	Coast Seafood Company	8
Mendocino	None Submitted	
Sonoma	CDHS Marine Biotoxin Monitoring Program	1
Marin	Cove Mussel Company	4
	Drakes Bay Oyster Company	20
	Hog Island Oyster Company	4
	CDHS Marine Biotoxin Monitoring Program	6
	Marin Oyster Company	3
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	5
	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
	California Polytechnic State University	3
	Tomales Bay Oyster Company	8
Santa Barbara	Santa Barbara Mariculture Company	10
	U.C. Santa Barbara	5
Ventura	Ventura County Environmental Health Department	2
	CDHS Volunteer (Bill Weinerth)	2
Los Angeles	None Submitted	
Orange	Aquarium of the Pacific, Long Beach	1
San Diego	Carlsbad Aquafarms, Inc.	2
	U.S. Navy Marine Mammal Program	2
	CDHS Volunteer (Steve Crooke)	2
	Scripps Institute of Oceanography	1

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from the coast of San Diego, Los Angeles, Orange, Ventura, Santa Barbara and San Luis Obispo counties.

The annual quarantine on the sport-harvesting of mussels was scheduled to go in effect on May 1. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. Routine biotoxin monitoring is maintained throughout this period. The annual quarantine does not affect the certified commercial shellfish growing areas in California. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

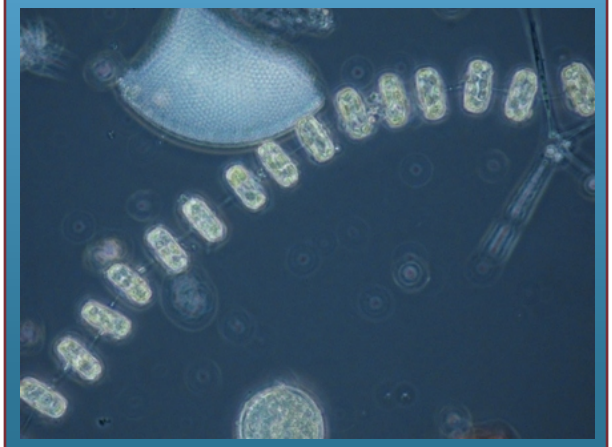
Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

Consumers are also advised that cooking does not eliminate the toxins from the shellfish tissue. Sportharvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during May, 2006.

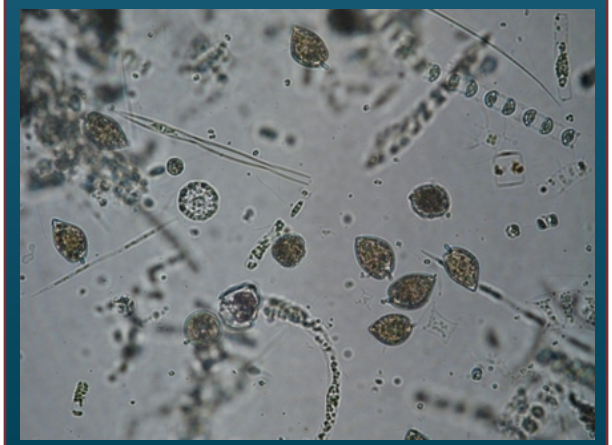
COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	5
	University of California Sea Grant Extension	1
Mendocino	None Submitted	
Sonoma	Cordell Banks National Marine Sanctuary	1
	CDHS Marine Biotoxin Monitoring Program	1
Marin	CDHS Volunteers (Brent Anderson, Marjorie Siegel, Mary Von Toksdorf, Cal Strobel, Richard Plant)	9
	Drakes Bay Oyster Company	7
	CDHS Marine Biotoxin Monitoring Program	5
Contra Costa	CDHS Marine Biotoxin Monitoring Program	1
San Francisco	DHS Volunteer (Eugenia McNaughton)	3
San Mateo	San Mateo County Environmental Health Department	1
	Marine Mammal Center Volunteer (Stan Jensen)	2
	U.C. Santa Cruz	3
Santa Cruz	U.C Santa Cruz	5
	Marine Mammal Center Volunteer (Nancy Scarborough)	3
Monterey	Marine Mammal Center Volunteers (Aubrey St. Marie, Marie Brayman)	5
	Monterey Abalone Company	4
	Marine Pollution Studies Laboratory	4
	DHS Volunteer (Jerry Norton)	1
San Luis Obispo	Morro Bay National Estuary Program	2
	DHS Volunteers (Renee and Auburn Atkins)	2
	California Polytechnic State University	3
	NOAA Coastal Discovery Center	2
	Terera Environmental	4
	Marine Mammal Center Volunteers (Debby Davis)	11
	Tomales Bay Oyster Company	1
	Patriot Sportfishing	1
Santa Barbara	Channel Islands National Marine Santuary	7
	National Park Service	3
	Santa Barbara Channel Keeper	1
	Santa Barbara Mariculture Company	5
	U.C. Santa Barbara	5
Ventura	CDHS Volunteer (Fred Burgess)	4
	Channel Islands National Marine Santuary	7
	Ventura County Environmental Health Department	1
	National Park Service	4
Los Angeles	Los Angeles County Sanitation District	6
	Catalina Island Marine Institute	3
	Los Angeles County Health Department	8
	Catalina Tall Ships Expeditions	8
	Pt. Mugu Naval Air Station	1
	City of Los Angeles Environmental Monitoring Division	2
Orange	DHS Volunteer (Debbie Karimoto)	1
San Diego	Scripps Institute of Oceanography	2
	DHS Volunteer (Paul Sims, Claire Sims)	4
	Avian Research Associates	2

PHYTOPLANKTON GALLERY



The diatom Thalassiosira was common along the California coast in May.

The diatom Biddulphia was common in Marin and San Luis Obispo.



The leaf-shaped dinoflagellate Prorocentrum was abundant at a number of sites along the Southern California coast.